Naval Academy; A. Cohen, Johns Hopkins University; Alexander Dillingham, U. S. Naval Academy; H. C. Gossard, U. S. Naval Academy; W. M. Hamilton, U. S. Nautical Almanac Office; Frank Morley, Johns Hopkins University; F. D. Murnaghan, Johns Hopkins University; R. E. Root, U. S. Naval Academy; C. A. Shook, U. S. Naval Academy; Clara E. Smith, Wellesley College (Goucher, 1918–1919); H. Ivah Thomsen, Johns Hopkins University; G. F. Winslow, Jr., U. S. Coast and Geodetic Survey; L. S. Hulburt, Johns Hopkins University.

The program consisted of a single session in the afternoon, and contained the following papers:

1. Content of a course in analytic geometry. By DR. G. R. CLEMENTS, U. S. Naval Academy. Discussion led by PROFESSOR CLARA L. BACON, Goucher College.

2. Lambert's mapping. By PROFESSOR FRANK MORLEY, Johns Hopkins University.

3. The teaching of the subject of limits. By PROFESSOR CLARA E. SMITH, Wellesley College.

4. The polyconic projection and the quadrillage associated therewith. By MR. O. S. ADAMS, U. S. Coast and Geodetic Survey.

After the program the members present were guests of Johns Hopkins University at the Hopkins Club, where a very enjoyable supper was served.

R. E. ROOT, *Secretary.*

UNDERGRADUATE MATHEMATICS CLUBS.

EDITED BY U. G. MITCHELL, University of Kansas, Lawrence.

CLUB ACTIVITIES.

THE MATHEMATICS CLUB OF BROWN UNIVERSITY, Providence, R. I. [*1918*, 33–34].

For 1918–19 the club is to be guided by

Chairman: Professor Nathaniel F. Davis;

Committee on Program: Professor Roland G. D. Richardson, Winona M. Perry Gr., Frances W. Wright '19, Harley F. Carey '20, Robert B. Lindsay '20;

Committee on Arrangements: Professor Theodore H. Brown, Rachel T. Easterbrooks '20, Clarence R. Adams Gr., Everett L. Sweet '21.

The following meetings have been held.

November 30, 1918: "The method of solving certain problems in the Ahmes papyrus" by Arnold B. Chace, Chancellor of the University.

February 14, 1919: "Archimedes" by Frances W. Wright '19; "Two methods of locating the German super-gun" [1] by Daniel B. Whitford '20; "The cattle problem of Archimedes" by Frances M. Merriam '20; "The logarithmic spiral" by Robert B. Lindsay '20.

[1] Report on H. F. MacNeish's article in *School Science and Mathematics*, October, 1918 (Vol. XVIII, pp. 626–628).

THE MATHEMATICS CLUB OF HUNTER COLLEGE, New York City [*1918*, 187–188].

So far as the editor knows this club is the first one to make use of special printed stationery for its correspondence. According to the letter head the officers for the year 1918–19 are as follows: President, Anita Rosenthal '19; vice-president, Kathryn McSorley '19; secretary, Louise Biehl '19; treasurer, Miriam Werner, instructor in mathematics.

The spirit of war service dominated the work of the Club throughout the year 1918. Most of the members were volunteer workers aiding the Legal and Local Draft Boards throughout the city and promoting the Hunter College drives for Liberty Loans, Red Cross, Y. W. C. A. and other organizations. A number took courses in the War Service Training School for Women and about a dozen worked as farmerettes.

The programs for the year were as follows.

March: "The need of evaluating one's self so as to render the most effective service" by Professor Emma M. Requa; "Mr. and Mrs. Ratio One to Two demonstrating practical mathematics" by Marion Graham '18 and Ellen Raymond '18; social meeting.

April: "Commercial education of the present day" by Mr. Alfred Sommerfield of Washington Irving High School, New York.

May: "High School mathematics as an aid to the interpretation and appreciation of life about us" by Professor Charles B. Upton of Teachers' College, Columbia University.

June: General business meeting; election of officers.

September: The social meeting was postponed on account of war activities.

October: Social meeting.

November: "The common place book" by Charles B. Walsh of Ethical Culture School, New York.

THE MATHEMATICAL AND ASTRONOMICAL CLUB OF SWARTHMORE COLLEGE, Swarthmore, Pa. [*1918*, 135].

The officers of the club for the year 1917–18 were as follows: First semester—president, Robert S. Blau '18; vice-president, Ethelwyn Bower '18; secretary, Gladys Pell '20. Second semester—president, John Trimmer '18; vice-president, Dorothy A. Johnson '18; secretary, Charlotte Moore '20.

The programs for the first six meetings of the year 1917–18 were given in an earlier number of the MONTHLY. The programs for the remaining meetings of the year were as follows:

December 18, 1917; "The depression range finder and its use in the present war" by John Trimmer '18; "The Barr and Strand range finder" by Ewing T. Corson, '18; "The use of a range finder for objects invisible from the place where the gun is located" by Robert S. Blau '18.

February 5, 1918: "The astrology of casting a horoscope" by Opal M. Robinson '18; "The history of mathematics" by Albert N. Nelson '18; "De Moivre's theorem and its applications" by Lena Clark '20; "Graphic methods of solving equations" by Professor John H. Pitman.

February 19: "Rifling a cannon" by Robert S. Blau '18; "The discovery of Neptune" by Boyd J. Brown '21; "Scales of notation" by Elizabeth Trorer '19; "Intra-Mercurial planets" by Professor John A. Miller.

March 5: "Methods used in passing from the properties of rectilinear figures to circular figures" by Ethelwyn Bower '18; "Properties of magic squares" by Albert N. Nelson '18; "Principles and applications of the planimeter" by Harry Yardley '19; "The use of the planimeter in finding the displacement of a ship" by John Trimmer '18.

March 19: "The solar eclipse of 1905" by Professor Miller; "The problem of mounting long focus cameras for photography" by Margaret E. Powell '19; "Theories of the formation of the corona" by Caroline H. Smedley Gr.

April 2: "The discriminant and its relation to higher plane curves" by Helen Deputy '18; "Structure of powder grains" by Frank Fetter '20; "Problems of gunnery" by John Trimmer '18; "The Gregorian calendar" by Reverend Walter A. Matos.

April 19: "The history of algebra," an illustrated lecture by Professor Louis C. Karpinski of the University of Michigan.

THE MATHEMATICAL AND PHYSICAL SOCIETY OF THE UNIVERSITY OF TORONTO, Toronto, Ontario [*1918*, 229–231].

Regular meetings of this club are held on alternate Thursdays at 4:15 p. m. The officers for the year 1918–19 are as follows: Honorary president, Professor Eli F. Burton; president, William W. Shaver '19; vice-president, Percy Lowe '20; secretary-treasurer, William S. Vaughan '20; corresponding secretary, Ila B. Giles '19; representatives of classes: Lily M. Floody '19, Arthur J. Sonley '20, Nora E. Gray '21, Dorothy G. Gavin '22.

The following programs are announced for the current year:

November 21, 1918: "The darkest year in British history" by Professor Alfred Baker.

December 5: "Mathematical puzzles" by Professor John Satterly; "The moon" by Franklin B. Keachie '19.

December 17: Social evening at 8 p. m.

January 9, 1919: "New Zealand" by Professor John C. Fields; "My first impressions of the course" by Mattie Levi '21.

January 23: Graduates' meeting. "Periodic precipitations" by Alice W. Foster Gr.; "The ancient scientists" by Mabel C. Child '18.

January 28: Skating party.

February 6: Open meeting at 8 p. m.

February 20: Debate between First and Second Year Students.

March 6: "The most important experiment in fourth year physics" by Mary I. Mackay '19; "Mathematical recreation" by Everett O. Hall '19.

March 20: "Radium: its discovery and use" by Raymond C. Dearle Gr.; annual elections.

THE UNDERGRADUATE MATHEMATICS CLUB OF THE UNIVERSITY OF WASHINGTON, Seattle, Washington.

The information given below concerning this club was furnished by Assistant Professor Eric T. Bell of the University of Washington.

The club was in existence for some ten years and had a membership of about twenty-five. Meetings were held twice a month with an average attendance of about fifteen. The outbreak of the war put an end to the club's activities, since all but two of its members were taken in the draft or in other service. The club is soon to be reorganized.

The club was managed entirely by the students without any interference or direction whatever from the faculty and the results amply justified this course. Members of the faculty were invited to attend the meetings of the club and occasionally did so. On rare occasions, when the students had not had time to prepare papers of their own, they asked a member of the faculty to give an account of some branch of mathematics not in the undergraduate courses; for example, mathematical crystallography, groups, higher arithmetic, applications of mathematics to biology, etc. Meetings were scheduled to last for an hour and a half to two hours but sometimes continued for as long as three hours.

Detailed information concerning programs is lacking since the records kept by the secretaries disappeared when the last secretary left the university at the outbreak of the war. Some of the programs given, however, were as follows.

"Ten British mathematicians." A review of Alexander Macfarlane's book (1916) of that title—"Non-euclidean geometry." Presented and discussed at several meetings by members who had studied the subject. Bonola's (1912) and Manning's (1901) books were used as sources—"Geometry of four dimensions." A presentation during several meetings of Manning's book (1914) and a sketch of the circle-representation as given in Weber-Wellstein (1905)—"Hilbert's proof of the transcendence of π"—"Continued fractions and 'Pell's equation'"—"Formal implication."

PROBLEMS AND SOLUTIONS.

EDITED BY B. F. FINKEL AND OTTO DUNKEL.

Send all communications about Problems to B. F. FINKEL, Springfield, Mo.

PROBLEMS FOR SOLUTION.

2762. Proposed by N. P. PANDYA, Amreli, India.

$ABCD$ is a cyclic quadrilateral inscribed in an ellipse. $AB = 2BC$ and $CD = 2DA$. Find the eccentricity of the ellipse in terms of the sides of the quadrilateral.

2763. Proposed by C. N. SCHMALL, New York City.

Show that the equation, $ky - 2k^{1/3}a^{2/3}x + x^2 = 0$, where k is a variable parameter, represents a family of parabolas passing through a fixed point, and all having the same areas, comprised between the curve and the x-axis.

Show, also, that the envelope of the family is the rectangular hyperbola whose equation is $xy = 2^5a^2/3^3$.